



RNLI | Research Project

Drowning deaths among children in West Bengal, India

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Research Institution:	The George Institute for Global Health, Child in Need Institute India
Principal researchers:	Medhavi Gupta, Dr Soumyadeep Bhaumik, Dr Margaret Peden, Dr Jagnoor Jagnoor, Sujoy Roy, Ranjan Panda

The RNLI's International Approach

The untold truth about drowning is that every other minute someone drowns around the world. The RNLI has a clear vision to 'save every one', therefore we won't stand by while any one, anywhere drowns. Our work internationally contributes towards our vision by making drowning prevention a higher priority and better resourced than it has been before - especially in areas with the greatest burden.

We are proud to share our lifesaving knowledge and expertise to help make a difference. We aim to be a catalyst for drowning prevention, working with partners globally and in countries where drowning is a significant problem to raise awareness, widen the research base, and help develop solutions to save more lives.

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Summary

Child drowning is a hidden global health crisis which requires urgent attention. Estimates from the World Health Organization (2019) suggest India accounts for 17% of the global drowning burden, with children in rural areas particularly at risk. The 4.12 million inhabitants of the low-lying, coastal Sundarbans region of West Bengal live in close proximity to open water, that is increasingly prone to climate-induced flooding. Widespread rural poverty and isolation increase the risk of child drowning.

This research project was conducted over a period of approximately one year, by The George Institute for Global Health India (TGI) and the Child in Need Institute, India (CINI). The study sought to address the lack

of data on the circumstances and rates of child drowning in the Sundarbans region of West Bengal. It used a unique participatory approach to identify drowning deaths within communities, and sought to analyse the feasibility of low-cost, sustainable solutions.

The research found that three children die from drowning in the Sundarbans region every day, making drowning the leading cause of death for children aged 1-9 years. Most deaths occurred in outdoor ponds within 50 metres of a child's home. Yet, there is significant potential to address this unacceptably high burden through integration of World Health Organization recommended drowning prevention interventions into existing community-based programmes.



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Research location

The research was completed in the eastern Indian state of West Bengal, which shares a border with Bangladesh. The work focused specifically on the Indian Sundarbans, a low-lying coastal region in the south of the state (see Figure 1 – inhabited blocks marked in purple). A vast network of intersecting rivers and channels make encounters with open water an unavoidable part of everyday life in the region.

RNLI-supported projects in Bangladesh, which share many physical and climatic characteristics with the Indian Sundarbans region, have previously demonstrated an urgent need for intervention to prevent child drowning in such contexts.

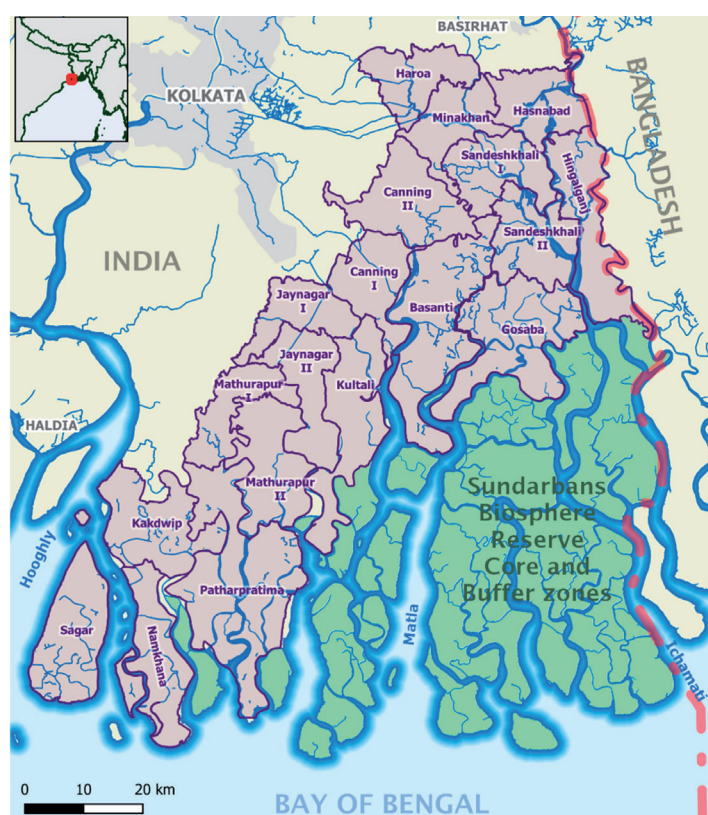


Figure 1. The Indian Sundarbans Region in West Bengal. © Marcinko, C.L.J.; Nicholls, R.J.; Daw, T.M.; Hazra, S.; et al. <https://doi.org/10.3390/w13040528>. CC BY 4.0

Research Objectives and Methods

This research project sought to address the following key questions:

- 1) **What is the burden of drowning in the Sundarbans region of West Bengal, and in what circumstances?**
- 2) **What type of drowning prevention interventions would be viable and acceptable to the local community?**
- 3) **Where would drowning prevention fit in government policy and programming within the State?**

To estimate the fatal drowning rate of children aged 1-9 across the region, a large-scale quantitative household survey was conducted. The survey covered an estimated population of 867,380 in 205 villages across all 19 blocks of the Sundarbans region. 11,027 community members participated in group interviews to identify fatal drowning cases in their local communities. Circumstances of the drowning were then discussed with the household of the deceased.

A qualitative study encompassing all 19 blocks in the Sundarbans region used a combination of in-depth interviews, focus group discussions and observations to gather perceptions on potential interventions from a wide range of stakeholders. From the community, men, women, leaders, grassroots organisations, as well as government workers provided insights which were then analysed.

An in-depth policy review was conducted through desk-based research to identify which existing State government policies and programmes could be leveraged to include community-based drowning prevention interventions.

Ethical approval was granted by the University of New South Wales (Australia) Human Research Ethics Committee (HC190274), The George Institute for Global Health (India) Ethics Committee (06/2019) and the Indian Council of Medical Research's Health Ministry Screening Committee (ID 2019-7679).



The Sundarbans region as seen from space Photo: NASA. CC BY-NC 2.0

Key findings

Child drowning is a major problem in the Sundarbans region of West Bengal

The study found drowning to be the leading cause of death for children aged 1-9 years, with the highest rates of drowning in children aged 1-4 years. Three children die from drowning in the Sundarbans region every day, with most deaths occurring in outdoor ponds within 50 metres of the child's home. In most cases drowning occurred when the child was unaccompanied, with their primary caregiver engaged in household work. The risk of drowning was found to be much higher during the day, and during the monsoon season (between July and October). There was no difference in rates of drowning between boys and girls.

Following a drowning incident, research found that only a minority of children are treated by formal health providers (17%) and application of resuscitation methods was found to be low (27%). The majority of deaths go unreported in government records, so official statistics may significantly underrepresent the magnitude of the problem across West Bengal.

Communities are largely receptive to evidence-based drowning prevention interventions

The World Health Organization recommends four community-based drowning prevention interventions: installing home-based barriers around open water, the provision of day-care for pre-school children,

teaching of basic swimming and water safety skills, and training of bystanders in safe rescue and resuscitation. On the whole, these were deemed acceptable by community stakeholders.

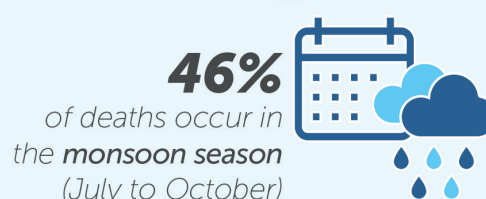
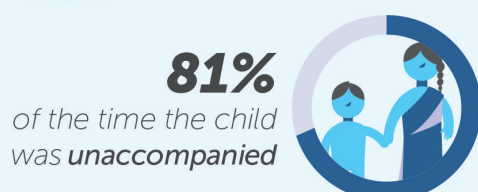
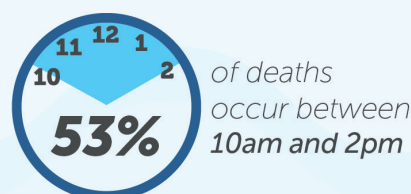
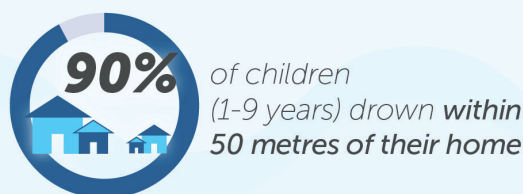
Home-based barriers were considered appropriate for children under 2 years, day-care provision for those aged 2-5 years, and basic swimming skills for school age children. Rescue and resuscitation training was positively accepted by parents, wanting to protect their children. However, community members voiced concerns around the affordability, resourcing and long-term sustainability of the interventions. There were more specific concerns relating to safeguarding of children in the care of others, accessibility of swimming ponds and barrier-design. It was considered that interventions would need to be modified to include marginalised groups.

Grassroots non-governmental organisations and community leaders felt that strong community engagement was vital to ensure the success of any proposed future interventions. Many participants stated that awareness programmes on drowning and its prevention were also required.

'You have to ignite the process through which the community can identify the resources they have within ... because outside implementation and outside output doesn't sustain forever. [Grassroots non-governmental organisation]

Child Drownings in the Sundarbans, West Bengal, India

What is the context of child drowning?



Key findings continued

Drowning prevention measures can be integrated into existing government programmes

There are currently no government programmes which specifically aim to reduce drowning across the region, however several existing programmes could be leveraged to enable the integration and implementation of World Health Organization recommended drowning prevention interventions. These include:

- 1) **Accredited Social Health Activist Programme** - India's largest public-sector community health worker initiative. Community health workers in the programme are responsible for maternal and child health, and were found to be well respected by most community members. Workers were interested in supporting the dissemination of drowning prevention interventions, as well as providing community training. However, they voiced concern that they may not have sufficient time to work on drowning prevention around existing responsibilities.
- 2) **Self-Help Groups** - predominantly run by women, and operating across India to engage members in income generation activities and social development. Those interviewed in the study were interested in supporting the delivery of day-care provision. Most households had at least one group member, who was well connected within the community. Self-Help Groups were said to require fewer government permissions than other programmes. Members stressed the need for comprehensive training.

- 3) **Integrated Child Development Scheme** - these workers provide nutrition and early childhood education programmes at a village-level in Anganwadi Centres. Young children are often supervised for 2 hours each morning at Anganwadi Centres, so there is potential scope to implement extended childcare provision. However, participants noted that these centres are highly variable in their quality, and resources are often stretched. Research informants noted that making changes to the centres requires government permission, which may be difficult to obtain.

Diverse stakeholder engagement is key to success

The study found that interventions will require stakeholder engagement at multiple levels, to ensure maximum buy-in and positive impact on drowning outcomes. The Indian Government has a strong hierarchical structure and support from local and state officials will be vital for government programmes to be adapted and leveraged for implementation. Government officials, village leaders and community members should be directly involved with the design, development and implementation of drowning prevention interventions'. Ongoing consultation with representatives from different caste, religious and political affiliations will be essential to ensure that future drowning prevention interventions are sustainable.

Child Drownings in the Sundarbans, West Bengal, India

What happens after a child drowns?



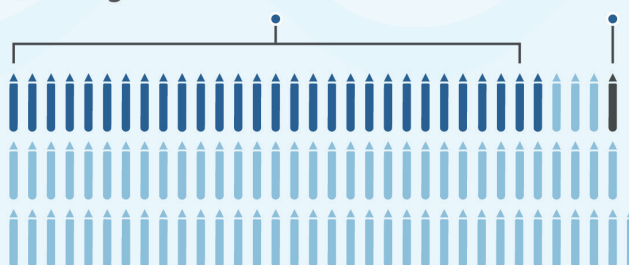
17%
of children were taken for formal health consultation

27%
received chest compressions



28%
of all cases reported to Civil Registrations Office

1%
of cases were issued a death certificate



How the RNLI is using the evidence

Despite India accounting for an estimated 17% of global drowning mortality, there has been an absence of data to support the development of appropriate drowning prevention interventions. This research has filled a critical gap in our understanding of the burden and context of drowning in the Sundarbans region of West Bengal, that was previously only supported by anecdotal evidence. The research identified extremely high rates of drowning. To date, these are the highest reported by any community-based survey in children aged 1-4 years, anywhere in the world.

This research will inform the RNLI's longer-term strategic approach to work with partners in India, co-designing drowning prevention interventions with communities and working with governmental and non-governmental institutions to integrate them into existing programmes and policies. The research is an important contribution to scaling up dialogue and action on drowning prevention at local, national and global levels.

Child Drownings in the Sundarbans, West Bengal, India

5 action points to **prevent child drowning**



Install home based barriers & fencing



Ensure supervised child care & safe places



Coordinate drowning prevention efforts with existing comprehensive government programs



Train adults in safe resuscitation, rescue or first responder training



Teach children swimming, water safety, & rescue training

Further reading

For access to the full reports please contact international@rnli.org.uk

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The Context of Drowning Prevention in West Bengal: A Policy Review. *The George Institute for Global Health & Child in Need Institute* (2019)

How can drowning programs be implemented in the Indian Sundarbans? Qualitative findings from the ground. *The George Institute for Global Health & Child in Need Institute* (2020)

Preventing drowning: an implementation guide. *The World Health Organization* (2017)



Photo: The George Institute

Acknowledgements

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We are particularly thankful to all study participants, particularly community members, for sharing their experiences of the drowning burden in the Sundarbans region.



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The RNLI is the charity that saves lives at sea

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